## CLAIMS

1. A sensor system with variable sensor-signal processing, comprising:

a sensor unit and an analytical unit;

- the sensor unit comprises a sensor element to detect a measurement variable (M) and to generate a sensor signal (U(M)) to represent the measurement variable (M), and a sensor-signal processing unit to process a sensor signal (U(M)), which represents the measurement variable (M), in accordance with prescribed parameters ($c_1$, $c_2$, $c_3 \ldots c_m$, $c_{m+1} \ldots c_M$), such that the parameters ($c_1$, $c_2$, $c_3 \ldots c_m$, $c_{m+1} \ldots c_M$) for processing the sensor signal can be adjusted externally;

- the sensor element has at least one input to which the measurement variable (M) can be conducted, and at least one output, from which the sensor signal (U(M)), representing the measurement variable (M), can be tapped;

-the sensor-signal processing unit has at least one input and at least one output (A; $A_1$, $A_2 \ldots A_k$, $A_{k+1} \ldots A_K$; $D_1$, $D_2 \ldots D_n$, $D_{n+1} \ldots D_{N-1}$, $D_N$);

- at least one input of the sensor-signal processing unit is connected to at least one output of the sensor element;

- at least one output (A) of the sensor-signal processing unit is assigned to output the sensor signal (Out), which has been processed in the sensor-signal processing unit;

- at least one output (A, $A_1$, $A_2 \ldots A_k$, $A_{k+1} \ldots A_K$; $D_1$, $D_2 \ldots D_n$, $D_{n+1} \ldots D_{N-1}$, $D_N$) of the sensor-signal processing unit is connected to the analytical unit, through a corresponding connecting line ($A_1$, $A_2 \ldots A_k$, $A_{k+1} \ldots A_K$; $D_1$, $D_2 \ldots D_n$, $D_{n+1} \ldots D_{N-1}$, $D_N$);

- the analytical unit functions to analyze output signals (Out) which are transmitted from

the sensor-signal processing unit, wherein

- the analytical unit further functions to redefine at least one parameter ($c_1$, $c_2$, $c_3$, $c_m$, $c_{m+1}...c_M$; $A_1$, $A_2...A_k$, $A_{k+1}...A_K$; $D_1$, $D_2...D_n$, $D_{n+1}...D_{N-1}$, $D_N$) for signal processing, on the basis of output signals (Out) delivered by the sensor-signal processing unit;

- there is at least one connecting line or a wireless connection path between the sensor-signal processing unit and the analytical unit, to transmit at least one of the newly defined parameters ($c_1$, $c_2$, $c_3$, $c_m$, $c_{m+1}...c_M$; $A_1$, $A_2...A_k$, $A_{k+1}...A_K$; $D_1$, $D_2...D_n$, $D_{n+1}...D_{N-1}$, $D_N$) to the sensor-signal processing unit, to modify the processing of the sensor signals

- the sensor-signal processing unit functions to set the transmitted parameters ($c_1$, $c_2$, $c_3$, $c_m$, $c_{m+1}...c_M$; $A_1$, $A_2...A_k$, $A_{k+1}...A_K$; $D_1$, $D_2...D_n$, $D_{n+1}...D_{N-1}$, $D_N$).

2. The sensor system of claim 1, characterized in that a connecting line for transmitting the redefined parameters ($c_1$, $c_2$, $c_3...c_m$, $c_{m+1}...c_M$; $A_1$, $A_2...A_k$, $A_{k+1}...A_K$; $D_1$, $D_2...D_n$, $D_{n+1}...D_{N-1}$, $D_N$) is that connecting line (A) which is connected to the output (A) which outputs the processed sensor signal.

3. The sensor system of claim 2, characterized in that a connecting line which transmits the determined parameters is a common power supply line (V) for the sensor unit and the analytical unit.

4. The sensor system of claim 3, characterized in that a necessary change of a parameter ($c_1$, $c_2$, $c_3...c_m...c_M$) for signal processing can be determined during running operation, and that at least one of the newly determined parameters ($c_1$, $c_2$, $c_3...c_m...c_M$) can be transmitted during running operation.

5. The sensor system of claim 4, characterized in that a filtering device is present, which allows the determined parameters ($c_1$, $c_2$, $c_3 \ldots c_m \ldots c_M$) to be transmitted only if this will not disturb signal transmission from the sensor unit.

6. The sensor system of claim 5, characterized in that at least one parameter ($c_1$, $c_2$, $c_3 \ldots c_m \ldots c_M$) can be transmitted by the change of an output load ($I_{load}$) between the sensor-signal processing unit and the analytical unit.

7. The sensor system of claim 6, characterized in that the output load ($I_{load}$) is continuously variable.

8. The sensor system of claim 7, characterized in that the output load ($I_{load}$) is stepwise variable.

9. The sensor system of claim 8, characterized in that at least on parameter ($c_1$, $c_2$, $c_3 \ldots c_m \ldots c_M$) can be transmitted by changing a supply voltage ($U_S$) for the sensor unit.

10. A method for changing the signal processing in a sensor system, with the following features:

- a measurement variable (M) is detected in a sensor element, which is part of a sensor unit, and a sensor signal (U(M)) is generated, which represents the measurement variable (M);

- the sensor signal (U(M)) is processed in a sensor-signal processing unit, which likewise is part of the sensor unit, in accordance with prescribed parameters ($c_1$, $c_2$, $c_3 \ldots c_m \ldots c_M$), such that the parameters ($c_1$, $c_2$, $c_3 \ldots c_m \ldots c_M$) can be adjusted externally;

- at least one signal (Out) processed in the sensor processing unit is analyzed in an analytical unit;

characterized in that

- the analytical unit transmits at least one of the parameters ($c_1$, $c_2$, $c_3 \ldots c_m \ldots c_M$) to the signal processing unit;

- the analytical unit transmits at least one of these parameters ($c_1$, $c_2$, $c_3 \ldots c_m \ldots c_M$), over an existing connecting line (A) between the sensor unit and the analytical unit;

- the sensor-signal processing unit adjusts the transmitted parameters ($c_1$, $c_2$, $c_3 \ldots c_m \ldots c_M$).

11. The method of claim 10, characterized in that at least one newly transmitted parameter ($c_1$, $c_2$, $c_3 \ldots c_m \ldots c_M$) is transmitted through the connecting line (A), through which the signal (Out) processed in the sensor-signal processing unit is transmitted to the analytical unit.

12. The method of claim 11, characterized in that at least one newly determined parameter ($c_1$, $c_2$, $c_3 \ldots c_m \ldots c_M$) is transmitted through a common power supply line (V) for the sensor system and the analytical unit.

13. The method of claim 12, characterized in that a necessary change of a parameter ($c_1$, $c_2$, $c_3 \ldots c_m \ldots c_M$) is transmitted to the sensor-signal processing unit during running operation only if the transmission of the signals (Out) from the sensor-signal processing unit is not disturbed thereby.

14. The method of claim 13, characterized in that a necessary change of a parameter ($c_1$, $c_2$, $c_3 \ldots c_m \ldots c_M$) is transmitted through the common power supply line (V) for the sensor system and the analytical unit.

15. The method of claim 14, characterized in that at least one parameter ($c_1$, $c_2$, $c_3 \ldots c_m \ldots c_M$)

is transmitted by a change of an output load ($I_{load}$) between the signal processing unit and the analytical unit.

16. The method of claim 15, characterized in that the output load ($I_{load}$) is varied continuously.

17. The method of claim 16, characterized in that the output load ($I_{load}$) is varied stepwise.

18. The method of claim 17, characterized in that at least one parameter ($c_1$, $c_2$, $c_3 \ldots c_m \ldots c_M$) is transmitted by a change of the supply voltage ($U_S$) for the sensor unit.

19. Application of claim 18 to generally programmable systems.

20. Application of the method of claim 10 for acquiring the measurement data of magnetic field signalas.